Development of New and Novel Inspection Systems for Composite Aircraft Non-Destructive Testing / NANOSCAN

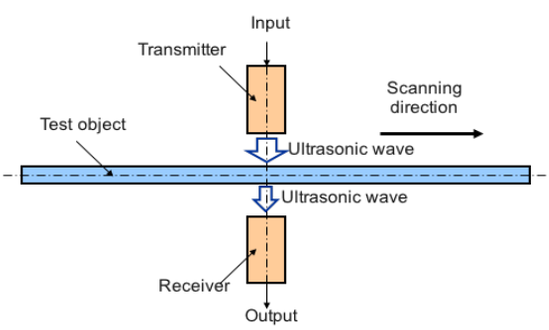
the objective of the project

Development of novel non-destructive techniques for detection of specific defects in composite materials during and after manufacture.

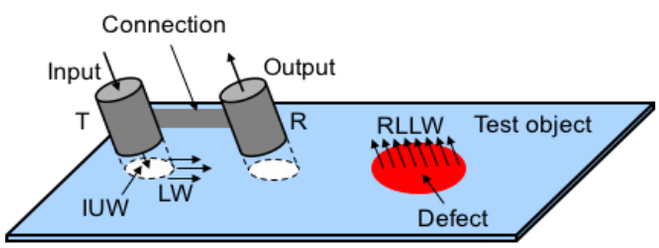
ultrasound institute

Has developed ultrasonic non-destructive testing methods of composite aerospace materials (GLARE, CFRP, honeycomb) based on application of air-coupled ultrasound.

the techniques used for investigation

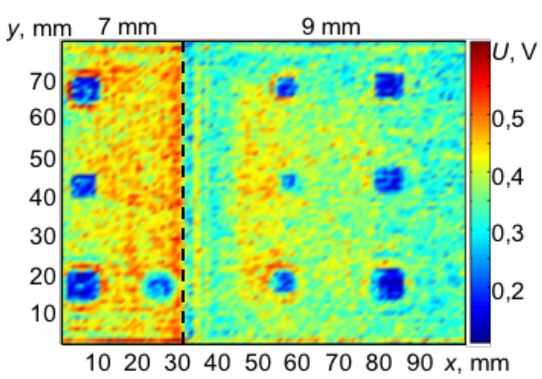


Through transmission technique with longitudinal waves

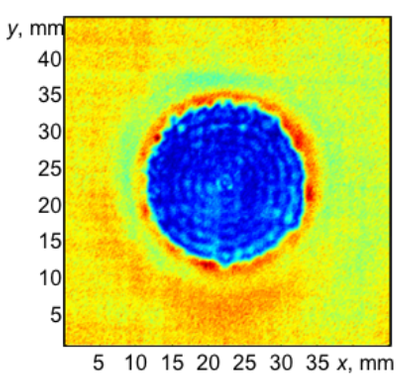


One side access testing technique with Lamb waves: Backscattering

investigation of the CFRP and GLARE3-3/2 test sample



The amplitude C-scan image of CFRP sample obtained using focussed piezocomposite 450 kHz air – coupled ultrasonic transducers



The amplitude C-scan image of GLARE sample with the 25mm delamination type defect obtained by through transmission technique

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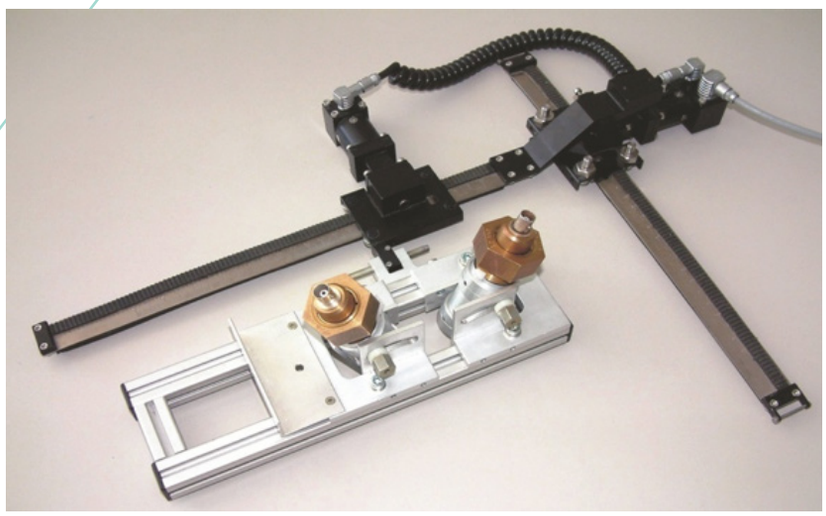
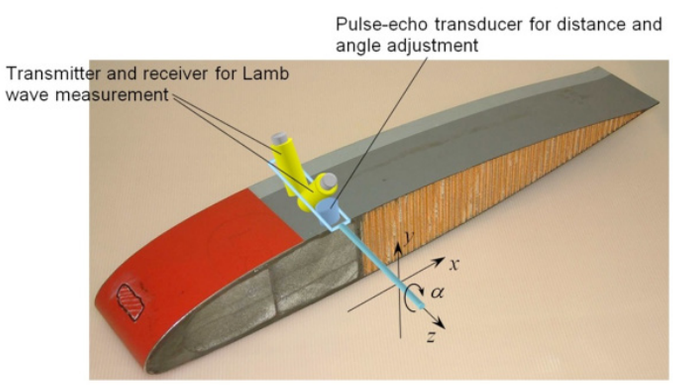
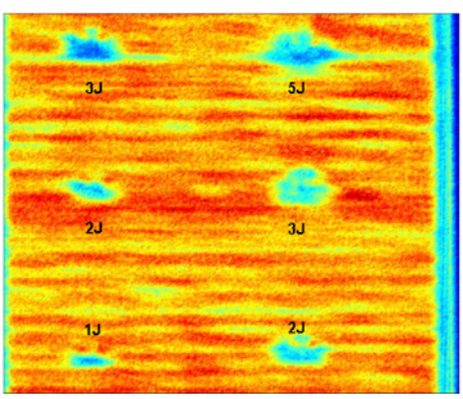


The image of semi-manual scanner with position encoders and air-coupled ultrasonic transducers

investigation of the honeycomb test samples



The experimental set-up used for adaptive scanning of the curved surface of the helicopter blade sample



The amplitude C-scan image of the composite honeycomb structure with impact defects obtained using Lamb wave technique

related publications

1. R.Kažys, L.Mažeika, E.Žukauskas. Investigation of accurate imaging of the defects in composite materials using ultrasonic air-coupled technique. International Journal of Materials and Product Technology. 2011. Vol. 41. No.1/2/3/4. p.105 – 116.

2. R. Kažys, A. Demčenko, E. Žukauskas, L.Mažeika. Air-coupled ultrasonic investigation of multi-layered composite materials. Ultrasonics. Vol. 44. 2006. p. e819–e822.